ELECTRONIC INNOVATIONS IN ACTION

TUBES

—PRODUCT INFORMATION—

6BF11

Compactron Dissimilar Double Pentode

• AUDIO POWER PENTODE • QUADRATURE FM DETECTOR • LOW HUM • 140 VOLTS B+

The 6BF11 is a compactron containing a sharp-cutoff, dual-control pentode (Section 2) and a power pentode (Section 1). The dual-control pentode is intended for use as an FM detector and the power pentode as an audio-frequency output amplifier in television receivers. The power output pentode features relatively high dynamic plate resistance which results in minimizing hum currents in the plate circuit due to power supply ripple.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC*	6.3±0.6	Volts
Heater Current‡	1.2	Amperes

Direct Interelectrode Capacitances§

Section 1

Grid-Number 1 to Plate: (1g1 to 1p)	0.24	pf
Input: 1g1 to (h + 1k + 1g2 + b.p. + i.s.)	13	pf
Output: 1p to (h + 1k + 1g2 + b.p. + i.s.)	10	pf

Section 2

Grid-Number 1 to Plate: (2g1 to 2p)	0.036	pf
Grid-Number 3 to Plate: (2g3 to 2p)	3.2	pf
Grid-Number 1 to All Except Plate: 2g1 to (h + 2k + 2g2 + 2g3 + i.s.)	6.5	pf

Section 2 (Cont'd)

Grid-Number 3 to All: 2g3 to (h + 2k + 2g1 + 2g2 + 2p + i.s.)	8.0	pf
Grid-Number 1 to Grid-Number 3: (2g1 to 2g3)	0.11	pf

Coupling

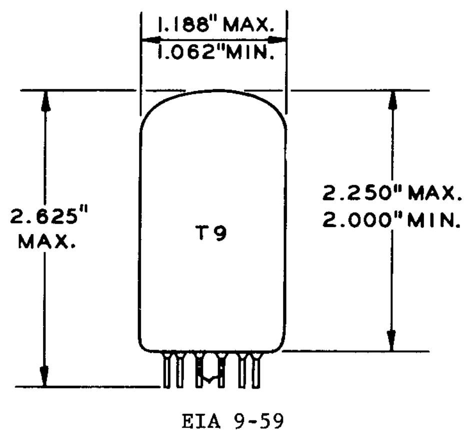
Plate (Section 2) to Plate (Section 2): (1p to 2p)	0.13	pf

MECHANICAL

Operating Position - Any
Envelope - T-9, Glass
Base - E12-70, Button 12-Pin
Outline Drawing - EIA 9-59

Maximum Diameter	1.188	Inches
Minimum Diameter	1.062	Inches
Maximum Over-all Length	2.625	Inches
Maximum Seated Height	2.250	Inches
Minimum Seated Height	2.000	Inches

PHYSICAL DIMENSIONS

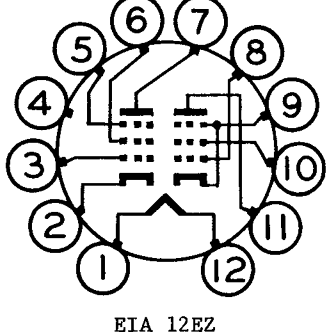


EIA 9-59

TERMINAL CONNECTIONS

Pin 1 - Heater
Pin 2 - Cathode (Section 2) and Internal Shield
Pin 3 - Grid Number 1 (Section 2)
Pin 4 - No Connection
Pin 5 - Grid Number 3 (Suppressor) (Section 2)
Pin 6 - Grid Number 2 (Screen) (Section 2)
Pin 7 - Plate (Section 2)
Pin 8 - Grid Number 1 (Section 1)
Pin 9 - Cathode and Beam Plates (Section 1)
Pin 10 - Grid Number 2 (Screen) (Section 1)
Pin 11 - Plate (Section 1)
Pin 12 - Heater

BASING DIAGRAM



EIA 12EZ



Supersedes 6BF11 D and R Sheet dated 12-63

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

SECTION 1

Rating	Value	Unit
Plate Voltage	165	Volts
Screen Voltage	150	Volts
Plate Dissipation	6.5	Watts
Screen Dissipation	1.8	Watts
DC Cathode Current	65	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts
Grid Circuit Resistance		
With Fixed Bias	0.25	Megohms
With Cathode Bias	0.5	Megohms

SECTION 2

Rating	Value	Unit
Plate Voltage	330	Volts
Suppressor Voltage	28	Volts
Screen Supply Voltage	330	Volts
Screen Voltage - See Screen Rating Chart		
Positive DC Grid-Number 1 Voltage	0	Volts
Plate Dissipation	1.7	Watts
Screen Dissipation	1.1	Watts
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A_1 AMPLIFIER

SECTION 1

Characteristic	Value	Unit
Plate Voltage	145	Volts
Screen Voltage	110	Volts
Grid-Number 1 Voltage	-6.0	Volts
Peak AF Grid-Number 1 Voltage	6.0	Volts
Plate Resistance, approximate	30000	Ohms
Transconductance	8600	Micromhos
Zero-Signal Plate Current	36	Milliamperes
Maximum-Signal Plate Current	40	Milliamperes
Zero-Signal Screen Current	3.0	Milliamperes
Maximum-Signal Screen Current	9.0	Milliamperes
Load Resistance	3000	Ohms
Total Harmonic Distortion, approximate	10	Percent
Maximum-Signal Power Output	2.4	Watts

CHARACTERISTICS AND TYPICAL OPERATION (Cont'd)

AVERAGE CHARACTERISTICS

SECTION 2

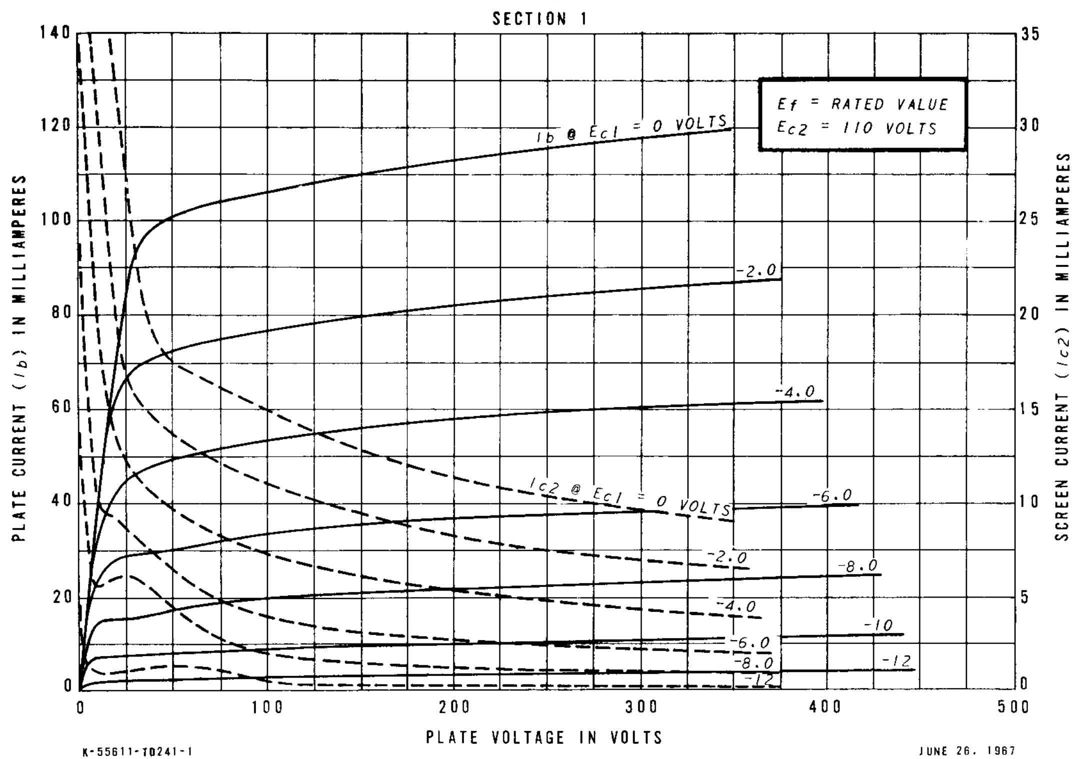
Plate Voltage	150	Volts
Suppressor Voltage	0	Volts
Screen Voltage	100	Volts
Cathode-Bias Resistor	560	Ohms
Plate Resistance, approximate	0.15	Megohms
Grid-Number 1 Transconductance	1000	Micromhos
Grid-Number 3 Transconductance	400	Micromhos
Plate Current	1.3	Milliamperes
Screen Current	2.0	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 10 Microamperes	-4.5	Volts
Grid-Number 3 Voltage, approximate Ib = 10 Microamperes	-4.5	Volts

NOTES

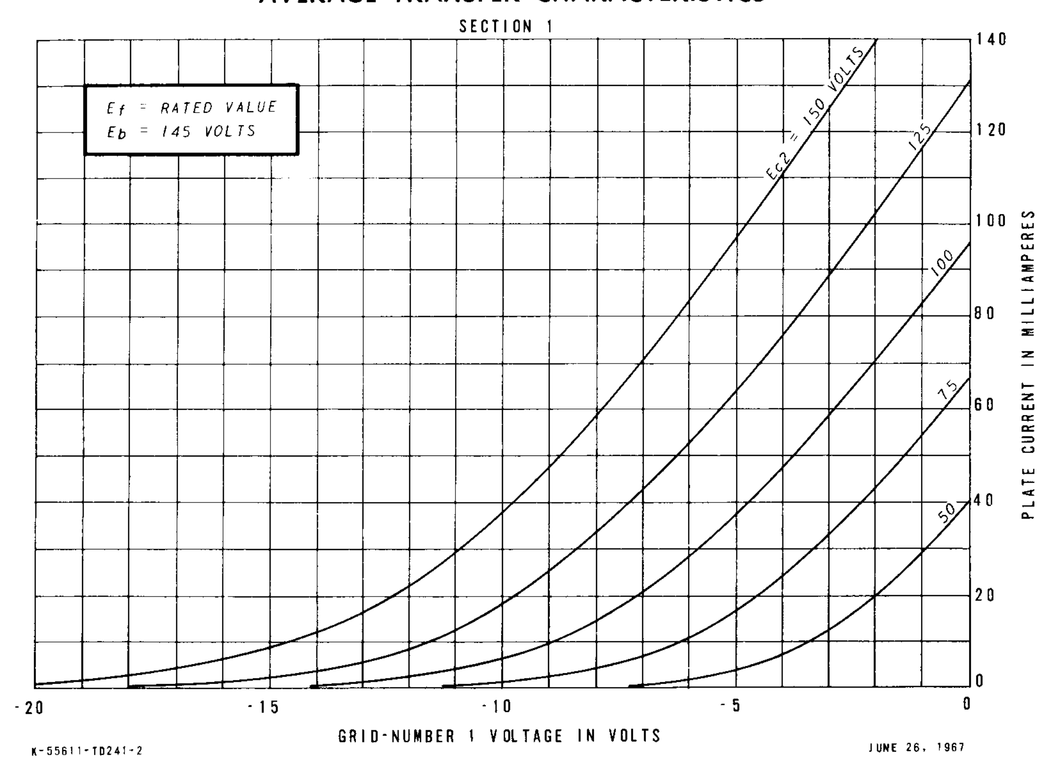
* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

‡ Heater current of a bogey tube at Ef = 6.3 volts.

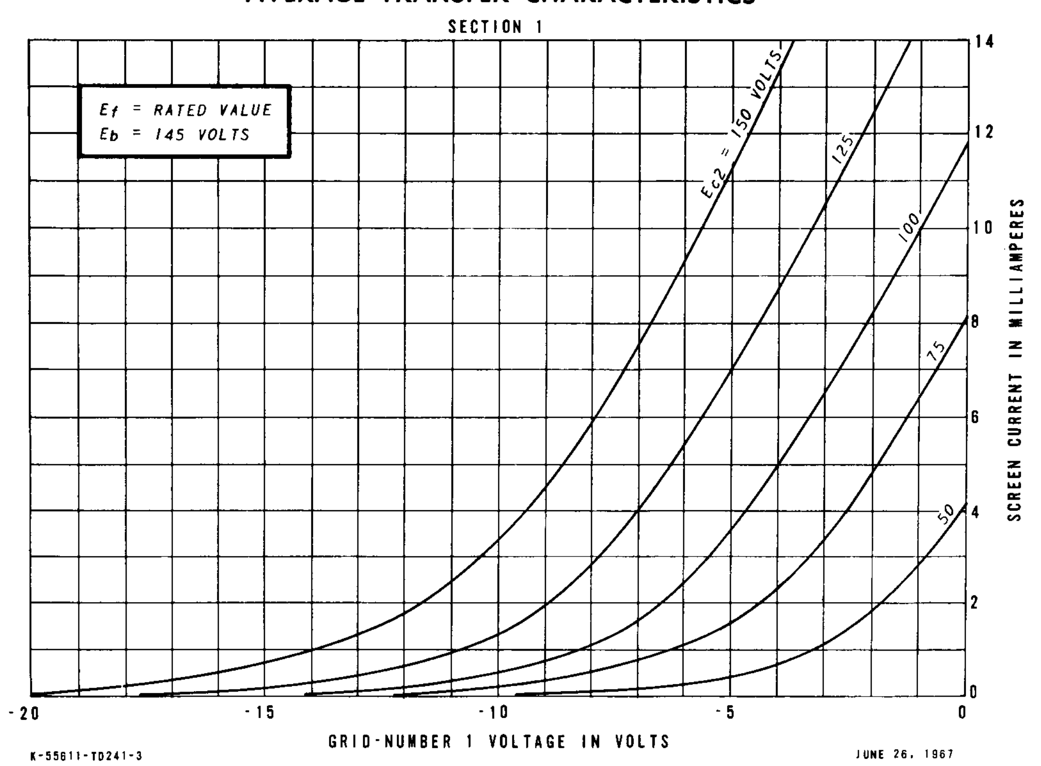
§ Without external shield.



AVERAGE TRANSFER CHARACTERISTICS

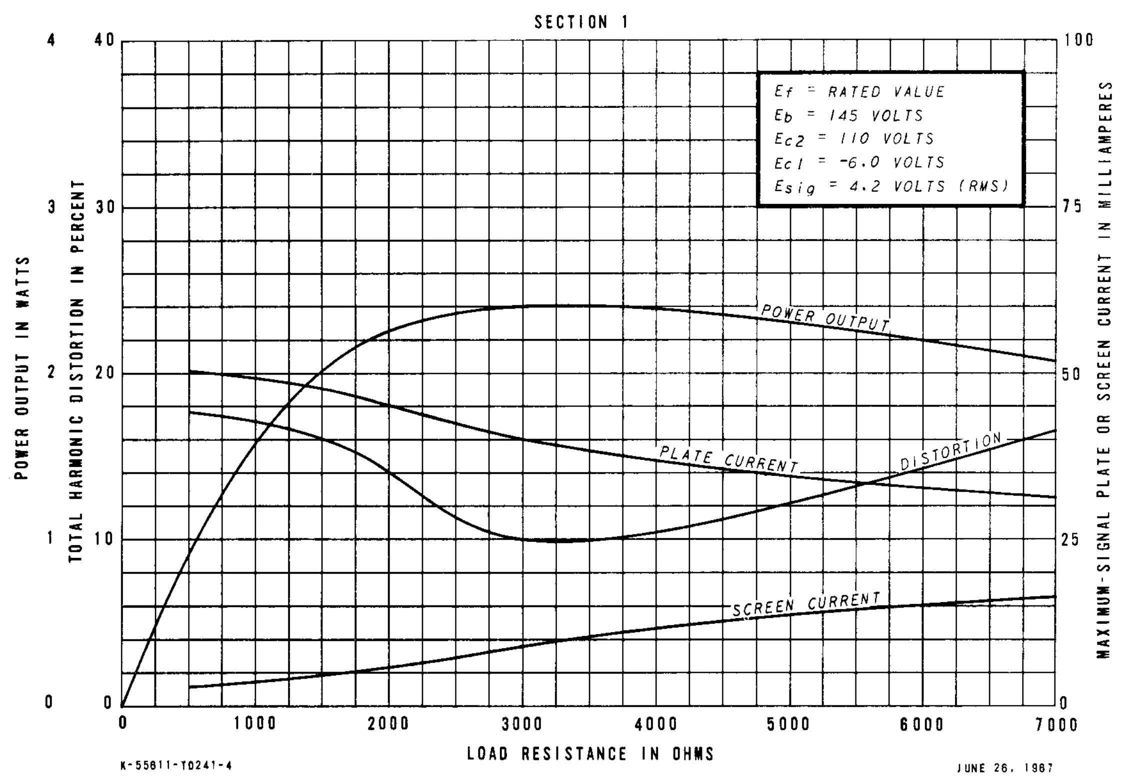


AVERAGE TRANSFER CHARACTERISTICS



OPERATION CHARACTERISTICS

SECTION 1



SCREEN RATING CHART

SECTION 2

AREA OF PERMISSIBLE OPERATION

SCREEN DISSIPATION IN WATTS

1.4
1.2
1.0
0.8
0.6
0.4
0.2
0

0 100 200 300 400

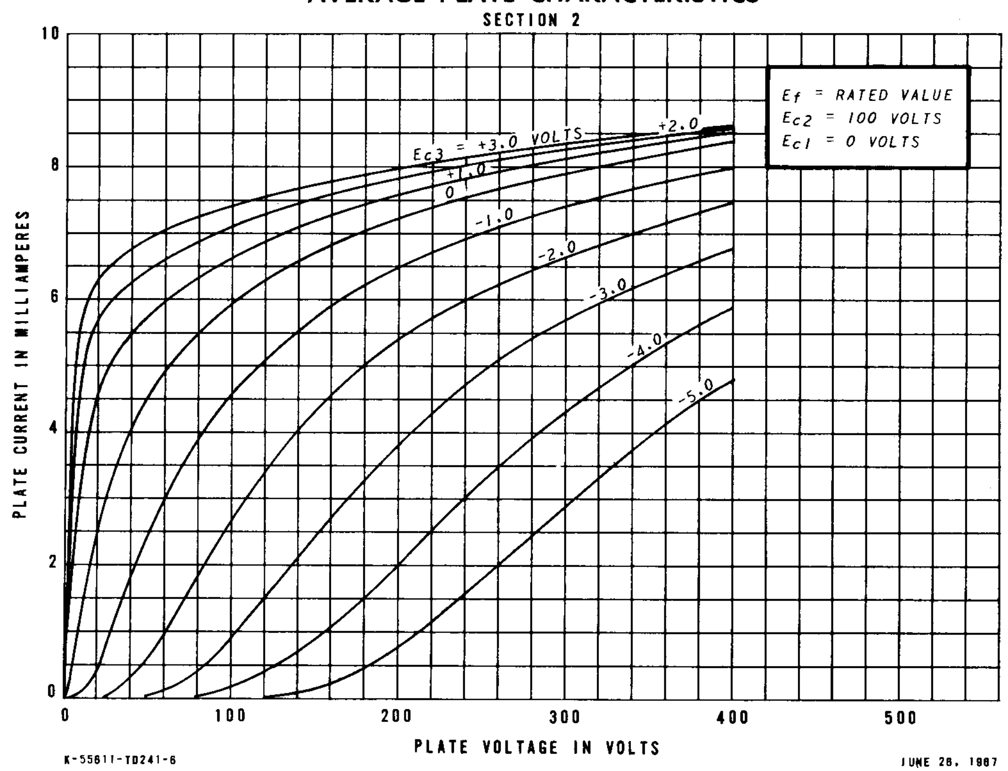
SCREEN VOLTAGE IN VOLTS

K-55611-TD241-5

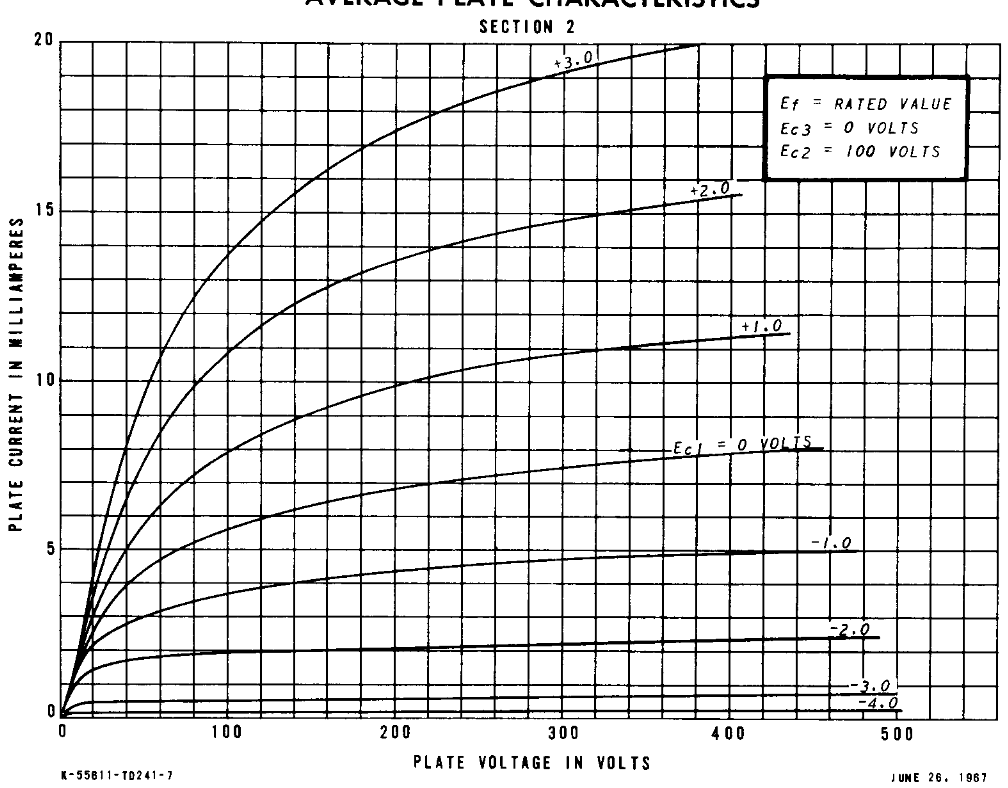
JUNE 26, 1967



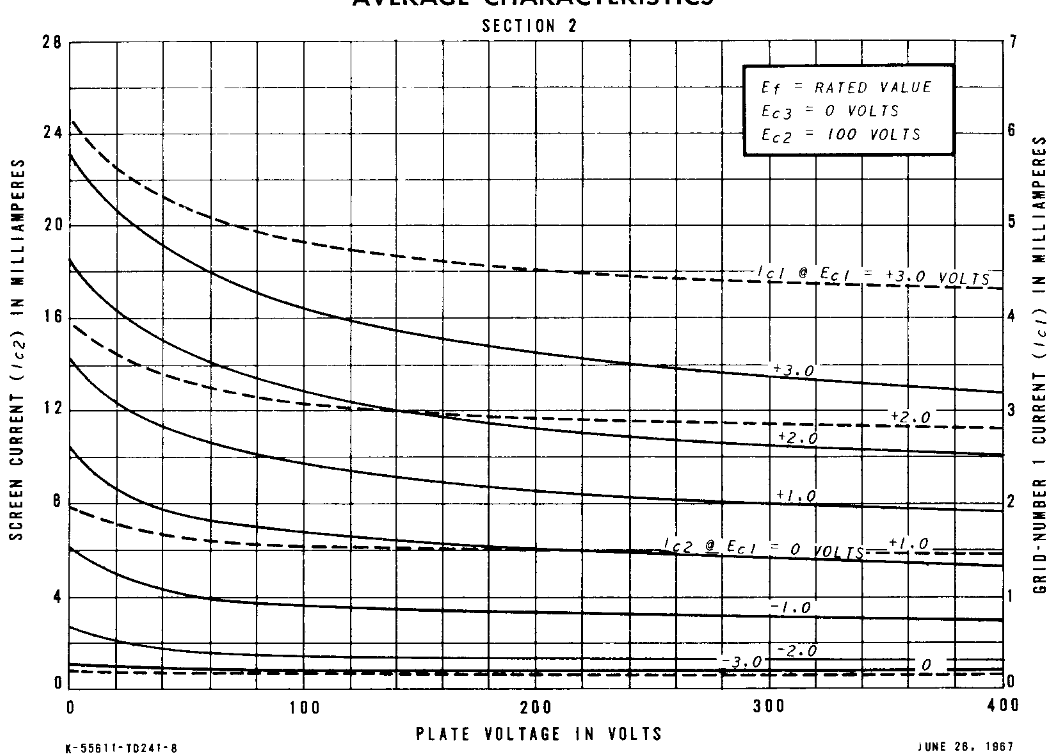
AVERAGE PLATE CHARACTERISTICS



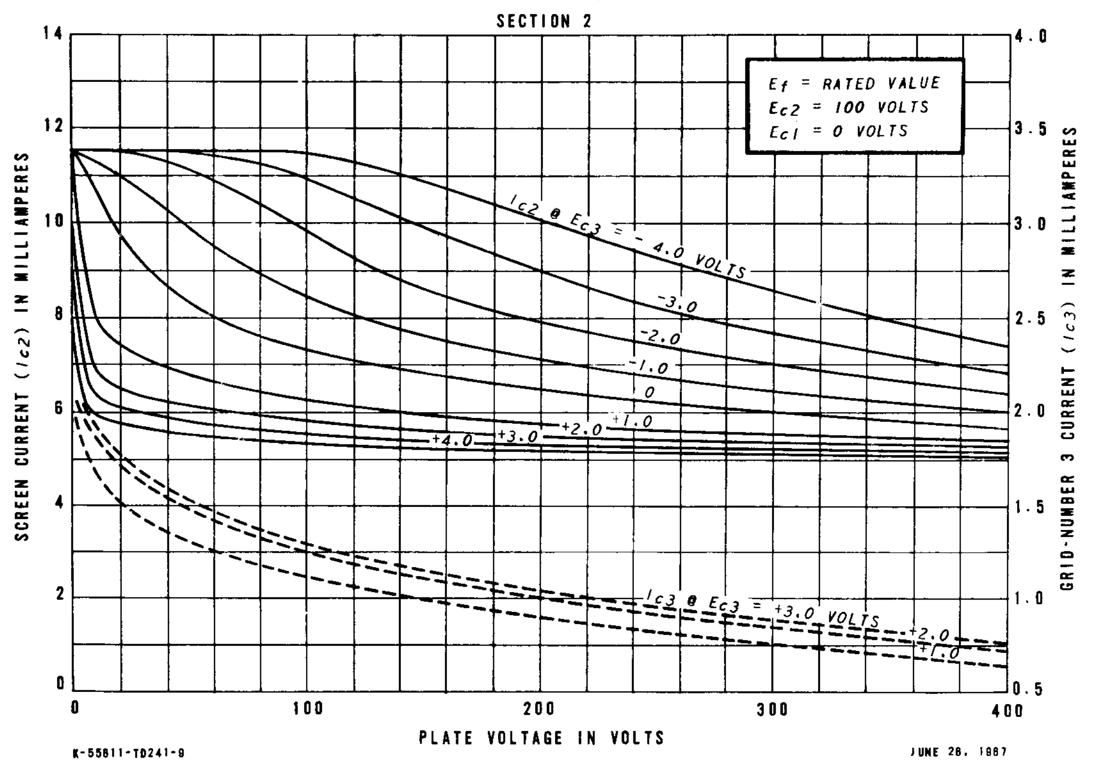
AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS

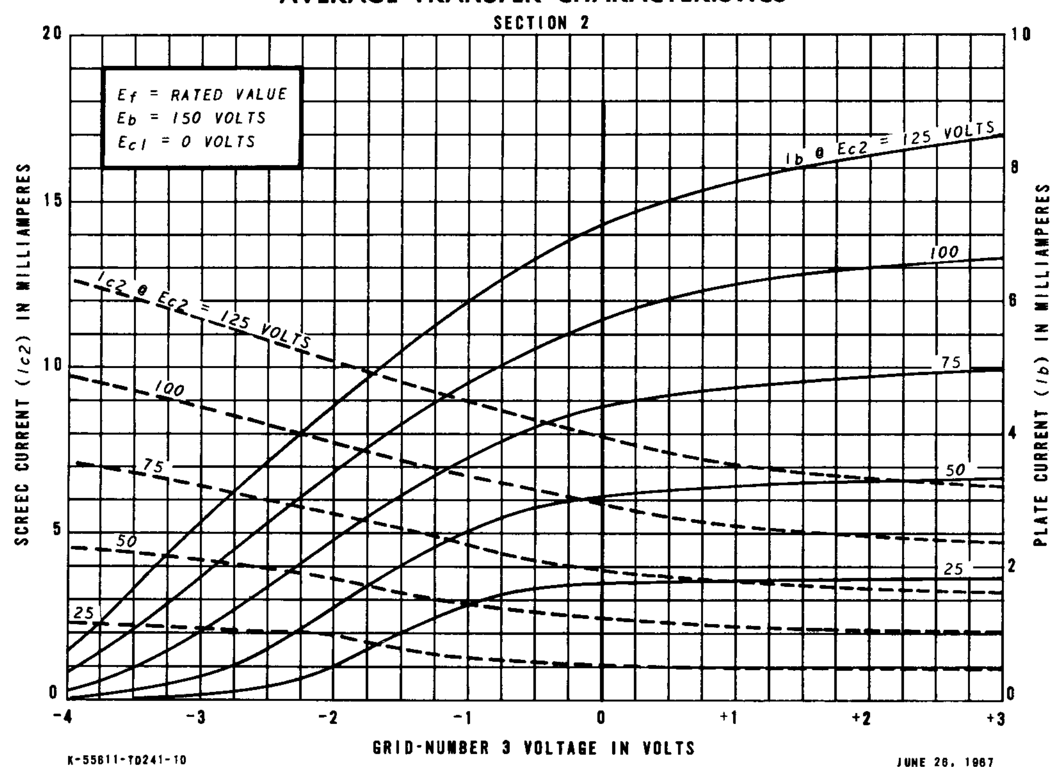






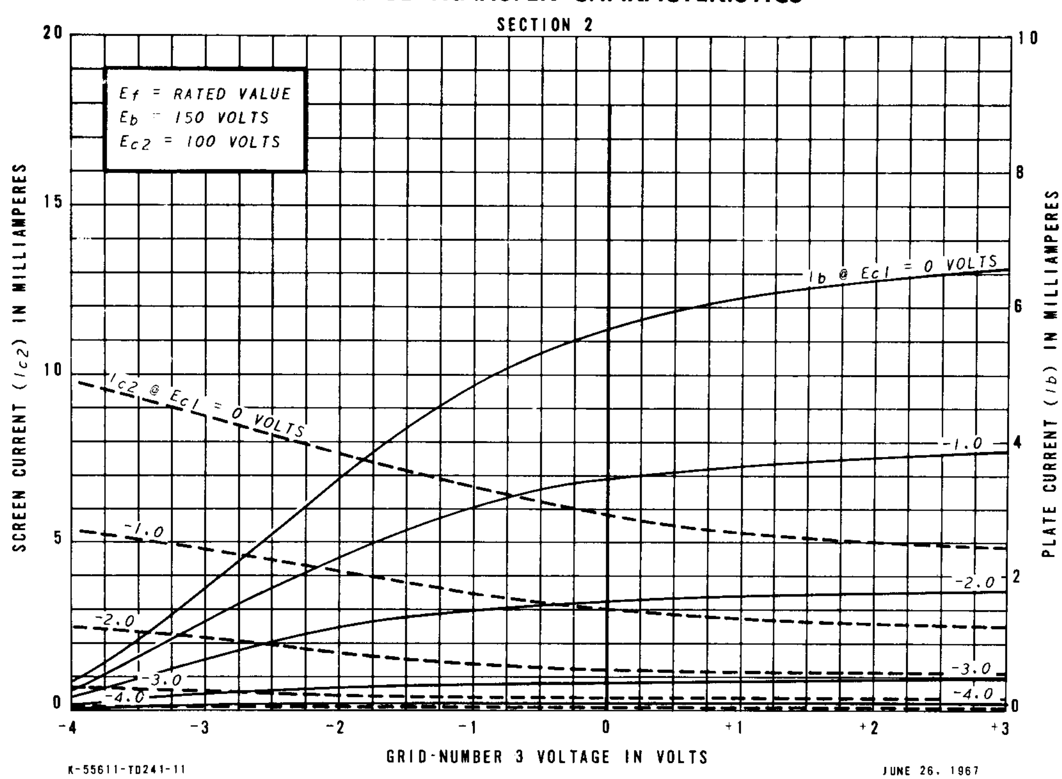


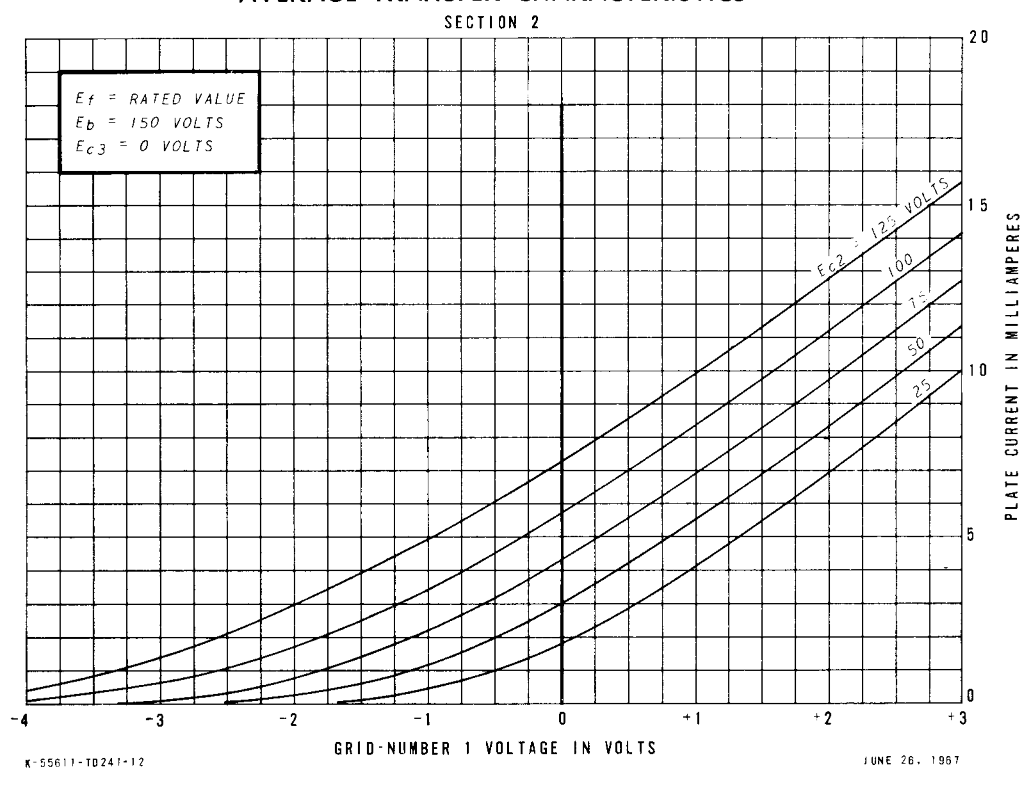
AVERAGE TRANSFER CHARACTERISTICS

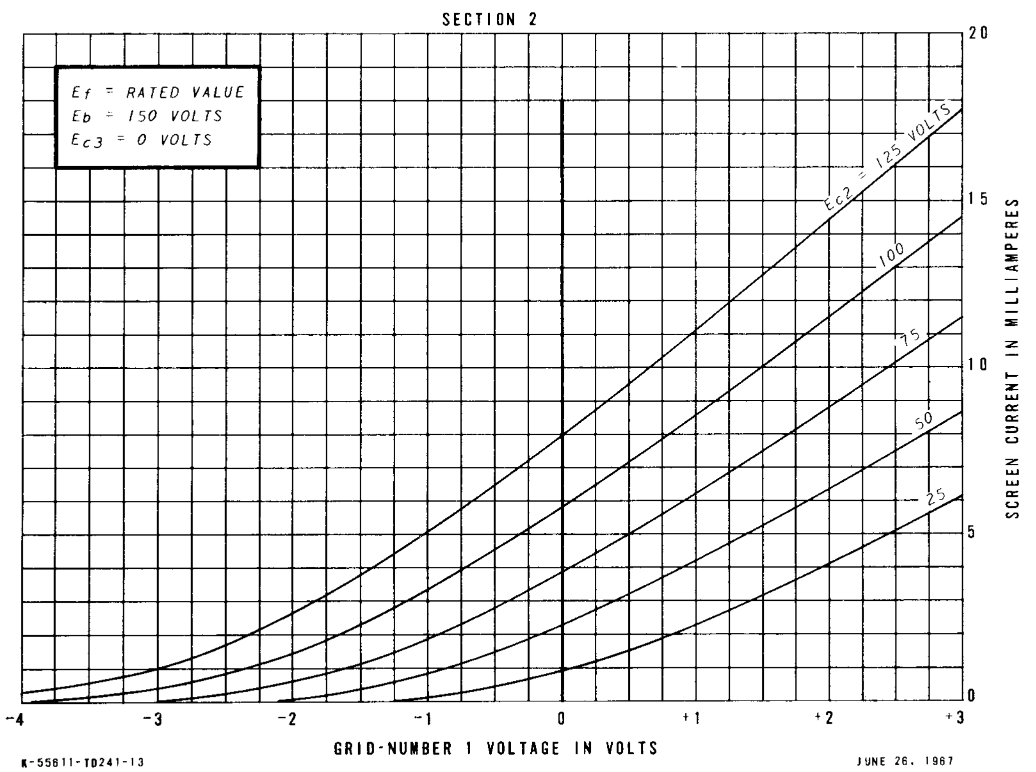




AVERAGE TRANSFER CHARACTERISTICS




AVERAGE TRANSFER CHARACTERISTICS
SECTION 2
Ef = RATED VALUE
Eb = 150 VOLTS
Ec3 = 0 VOLTS
Ec2 = 125 VOLTS
100
75
50
25
PLATE CURRENT IN MILLIAMPERES
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD241-12
JUNE 26, 1967


AVERAGE TRANSFER CHARACTERISTICS
SECTION 2
Ef = RATED VALUE
Eb = 150 VOLTS
Ec3 = 0 VOLTS
Ec2 = 125 VOLTS
100
75
50
25
SCREEN CURRENT IN MILLIAMPERES
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD241-13
JUNE 26, 1967

AVERAGE TRANSFER CHARACTERISTICS

SECTION 2

Ef = RATED VALUE
Eb = 150 VOLTS
Ec3 = 0 VOLTS

Ec2 = 125 VOLTS
100
75
50
25

SCREEN CURRENT IN MILLIAMPERES

0 5 10 15 20 25 30 35

-5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5

GRID-NUMBER 1 VOLTAGE IN VOLTS

K-55611-TD337-14

SCREEN RATING CHART

SECTION 2

AREA OF PERMISSIBLE OPERATION

SCREEN DISSIPATION IN WATTS

0 0.2 0.4 0.6 0.8 1.0 1.2 1.4

0 100 200 300 400

SCREEN VOLTAGE IN VOLTS

K-55611-TD337-15

TUBE PRODUCTS DEPARTMENT

Owensboro, Kentucky 42301

GENERAL  ELECTRIC